

MACROTHELE SPIDERS FROM XISHUANGBANNA RAINFOREST OF YUNNAN, CHINA (ARANEAE, HEXATHELIDAE)

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Abstract Two species of the hexathelid spider genus *Macrothele* from Xishuangbanna Rainforest, Yunnan, China are studied: *M. menglunensis* sp. nov. and *M. bannaensis* Xu & Yin, 2001. The male of *M. bannaensis* is reported for the first time.

Key words New species, taxonomy, etymology, description, diagnosis.

1 Introduction

The spider family Hexathelidae can be identified by having eight eyes, a transverse fovea, one or two rows of teeth on the cheliceral furrow, numerous labial cuspules, three claws, and four to six spinnerets. A total of 11 genera are included in this family worldwide, but only *Macrothele* is recorded from Southwestern China with 11 species (Platnick, 2013). *Macrothele* spiders are characterized by having the long posterior sternal sigilla, the presence of only one row of teeth on promargin and one row of small teeth on retromargin of chelicerae, the incrassated Tibia I in males, and the presence of spines on tarsi.

Our study on the spiders of Xishuangbanna Rainforest is focused in the Xishuangbanna Tropical Botanical Garden (XTBG) of Chinese Academy of Science in Menglun Town. Intensive collection of spiders in XTBG have been conducted since 2006 using different collecting methods (pitfall traps, tree trunk traps, canopy fogging, direct searching, etc.). *Macrothele* material used in this study was collected by Dr. ZHENG Guo (Shenyang Normal University) with pitfall traps between July 2006 and Aug. 2007.

2 Material and Methods

Specimens were examined and measured with a LEICA M205 C stereomicroscope; details were studied with an Olympus BX51 compound microscope. Illustrations were made using a camera lucida attached to the Olympus BX51 microscope. Male palps and female genitalia were examined and illustrated after they were dissected from the spiders. Vulvae were removed and treated in a warm 10 % solution of potassium hydroxide (KOH) before illustration. All measurements are given in millimeters unless otherwise noted. Leg measurements are shown as: total length (femur + patella + tibia +

metatarsus + tarsus). Leg segments were measured on their dorsal side.

The following abbreviations are used: AL, abdomen length; ALE, anterior lateral eye; AME, anterior median eye; AME-AME, distance between AME and AME; AME-ALE, distance between AME and ALE; AW, abdomen width; CL, carapace length; CW, carapace width; PLE, posterior lateral eye; PME, posterior median eye; PME-PME, distance between PME and PME; PME-PLE, distance between PME and PLE; TL, total length.

All specimens used in this study are deposited in the Institute of Zoology, Chinese Academy of Sciences in Beijing, China (IZCAS).

3 Taxonomy

Family Hexathelidae Simon, 1892

Genus *Macrothele* Ausserer, 1871

Type species: *Mygale calpeiana* Walckenaer, 1805

Macrothele menglunensis sp. nov. (Figs 1–16)

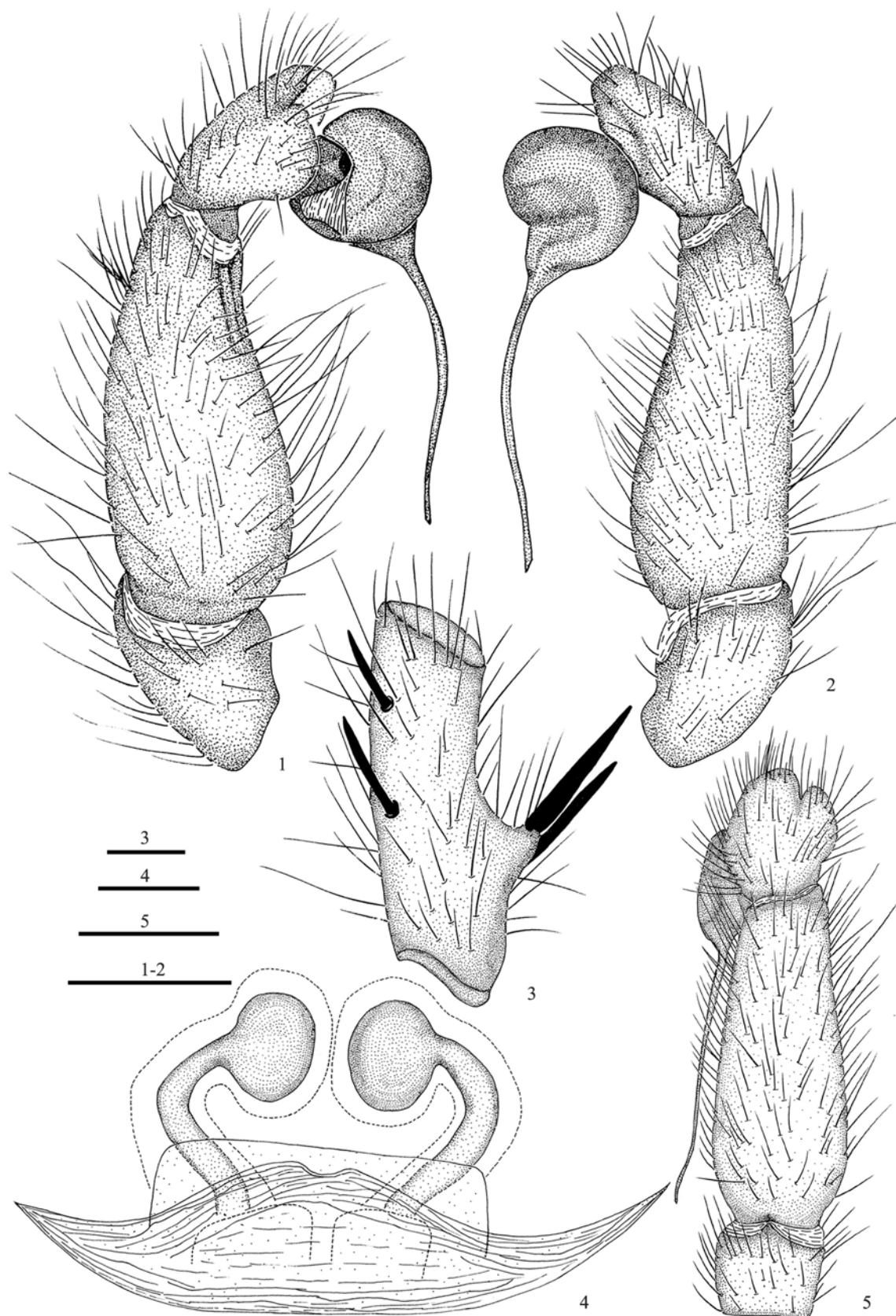
Holotype male (IZCAS), rubber plantation (about 20 years old) (21° 55' N, 101° 16' E; alt. 585 m), Xishuangbanna Tropical Botanical Garden, Menglun Town, Mengla County, Yunnan, China, 16–24 Dec. 2006, leg. ZHENG Guo. Paratypes: 102 males, 12 females (IZCAS), 1 Jan. – 31 Feb. 2007, other data as holotype.

Etymology. The specific name refers to the type locality; adjective.

Diagnosis. The new species is similar to *M. bannaensis* Xu & Yin, 2001 in palpal bulb and embolus (Figs 1–2, 5–8, 17–18, 21–24), but can be distinguished by: 1) 2–4 cuspules on labium (Fig. 9), but more than 20 cuspules in *M. bannaensis* (Fig. 25); 2) without spine on palpal tibia (Figs 1–2, 5–8), but presence in *M. bannaensis* (Figs 17–18, 21–24); 3) male tibia II with 2 strong ventral median

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Figs 1 – 5. *Macrothele menglunensis* sp. nov., male holotype and female paratype. 1 – 2, 5. Left male palp. 3. Male tibia II. 4. Vulva. 1, 3. Prolateral views. 2, 4. Dorsal views. 5. Retrolateral view. Scale bars: 1 – 2, 5 = 1.0 mm; 3 – 4 = 0.5 mm.



Figs 6 – 15. *Macrothele menglunensis* sp. nov., male holotype and female paratype. 6 – 8. Left palp. 9 – 10. Labium and endites, ventral view. 11 – 13. Tibia II. 11. Ventral view. 14 – 15. Habitus. 6 – 9, 11 – 13, 15. Male. 10, 14. Female. 6, 13. Prolateral views. 7, 14 – 15. Dorsal views. 8, 12. Retrolateral views. Scale bars: 6 – 8, 11 – 13 = 0.5 mm; 9 – 10 = 0.5 mm; 14 – 15 = 4.0 mm.



Fig. 16. *Macrothele menghunensis* sp. nov., female paratype. Vulva, dorsal view. Scale bar = 0.5 mm.

spines raised on a low spur (Figs 3, 11–13), but not raised on a spur in *M. bannaensis* (Figs 19, 27); 4) apices of receptacula globular, strongly inflated (Figs 4, 16), but pyriform in *M. bannaensis* (Figs 20, 30).

Male (holotype). TL 15.06 (including chelicerae), CL 5.55, CW 4.90, AL 5.50, AW 3.70, AME diameter 0.31, ALE diameter 0.22, AME-AME 0.13, AME-ALE 0.06, PME diameter 0.32, PLE diameter 0.26, PME-PME 0.46, PME-PLE 0.06, leg I: 15.05 (4.40 + 2.25 + 3.10 + 3.20 + 2.10), leg II: 14.85 (4.10 + 2.15 + 3.10 + 3.25 + 2.25), leg III: 14.60 (3.60 + 1.55 + 3.50 + 3.65 + 2.30), leg IV: 16.30 (4.15 + 2.00 + 3.25 + 4.40 + 2.50). Carapace red-brown. Cephalic region slightly elevated. Eyes in a compact group. Chelicerae red-brown. Labium, endites and sternum yellow-brown. Labium wider than long, carrying 2–4 cuspules (Fig. 9). Endites carrying 20–28 black cuspules (Fig. 9). Sternum with 3 pairs of sigilla; anterior two pairs smaller than posterior pair. Palp and legs yellow-brown, spinose and hairy. Palpal tibia proximally swollen, without spine (Figs 1–2, 5–8). Bulb ovoid, with long piliform embolus, embolus almost reaching proximal end of tibia (Figs 1–2, 5–8). Lyra absent on palpal trochanter and coxa I. Legs unmodified, with three tarsal claws, no megaspines. Leg I with 14 spines (patella 1, tibia 13 spines in two rows); leg II with 14 spines (patella 1; tibia 2 prolateral and 2 ventral; metatarsus 4; tarsus

5); leg III and IV with many spines. Abdomen gray-brown, hairy, with 4 pairs of light patches. Two pairs of spinnerets.

Female. TL 15.75 (including chelicerae), CL 6.90, CW 5.25, AL 8.25, AW 5.40, AME diameter 0.26, ALE diameter 0.44, AME-AME 0.16, AME-ALE 0.08, PME diameter 0.23, PLE diameter 0.48, PME-PME 0.57, PME-PLE 0.08, leg I: 13.05 (4.10 + 2.15 + 2.75 + 2.30 + 1.75), leg II: 13.00 (3.90 + 2.25 + 2.75 + 2.20 + 1.90), leg III: 11.75 (3.45 + 2.20 + 1.95 + 2.35 + 1.80), leg IV: 14.70 (4.10 + 2.15 + 2.80 + 3.50 + 2.15). Habitus as in Fig. 13. Ventral spines of tibia II not enlarged not concentrated medially and not raised on a spur. Apex of receptaculum globular; receptacular stalk relatively short, its base covered by a membrane (Figs 4, 16).

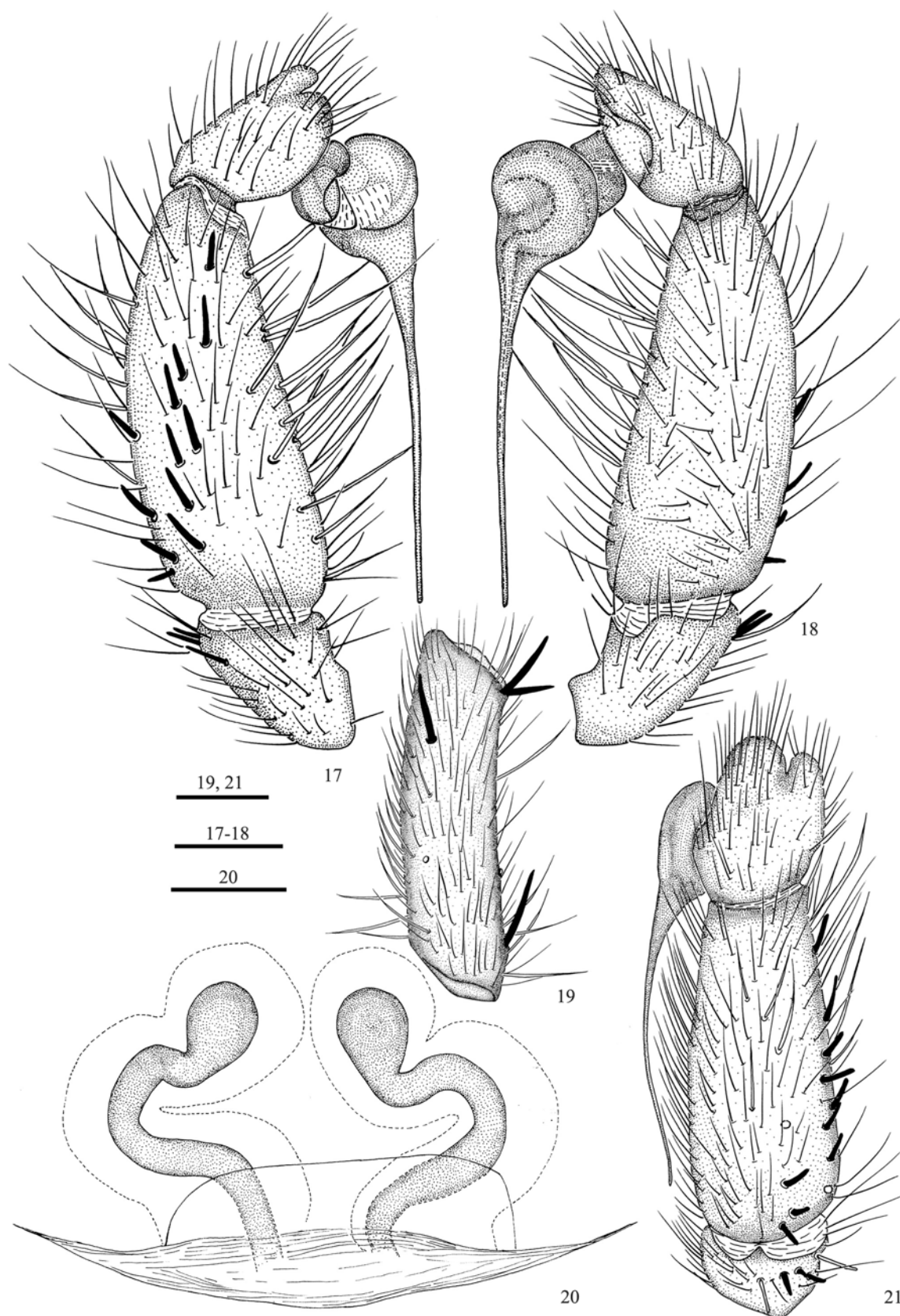
Variations. Total length (males) 14.60–15.75 ($n = 8$); (females) 14.12–15.85 ($n = 8$).

Distribution. Yunnan, China.

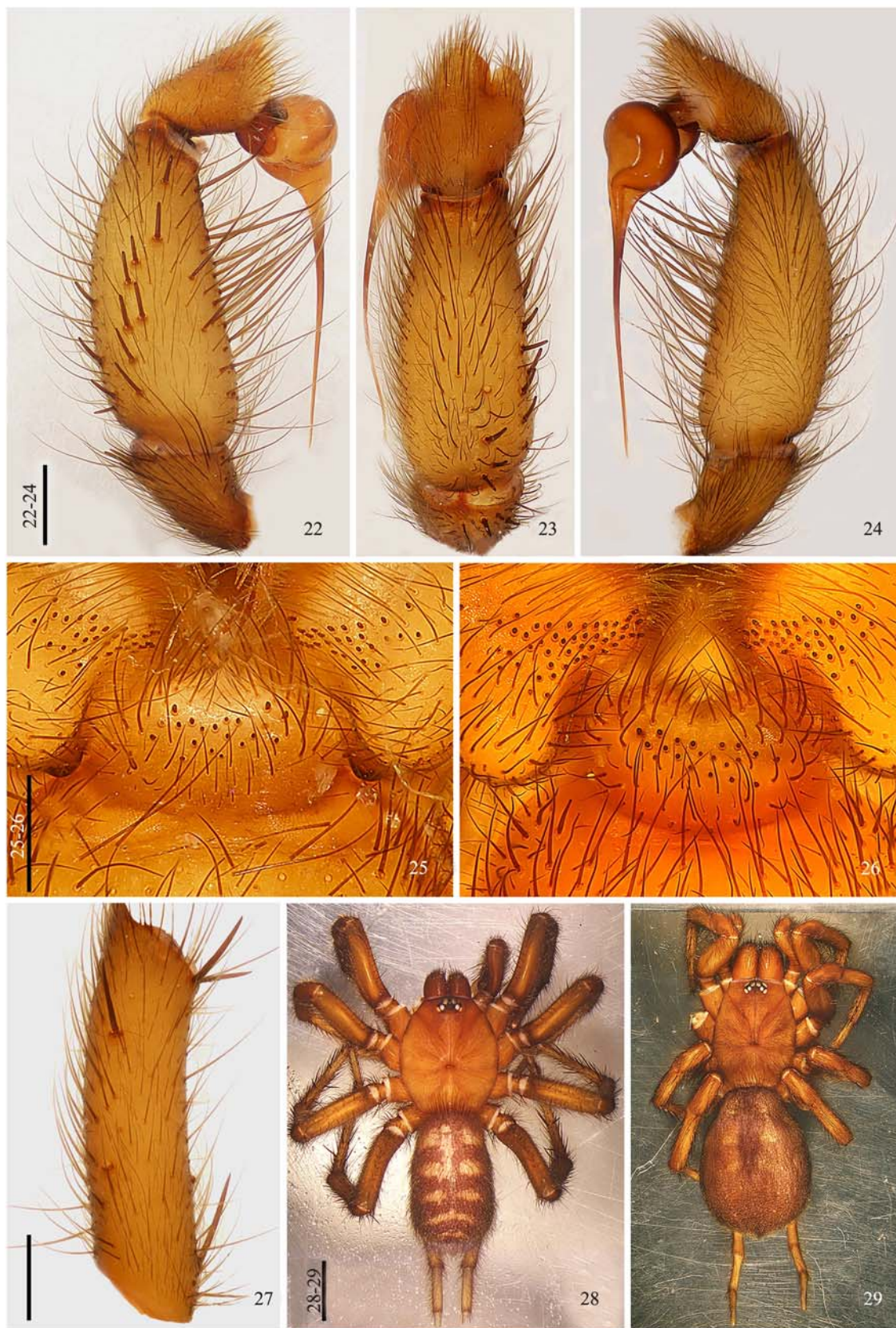
***Macrothele bannaensis* Xu & Yin, 2001 (Figs 17–30)**

Macrothele bannaensis Xu & Yin 2001: 66, figs 11–6.

Material examined. China, Yunnan, Xishuangbanna Tropical Botanical Garden, Mengla County, Menglun Town, 659 males, 102 females (IZCAS), collected with pitfall traps in secondary tropical montane evergreen broad-leaved forest, secondary tropical seasonal rainforest, primary tropical



Figs 17 – 21. *Macrothele bannaensis* Xu & Yin, 2001, specimens from Xishuangbanna. 17 – 18, 21. Left male palp. 19. Male tibia II. 20. Vulva. 17, 19. Prolateral views. 18, 20. Dorsal views. 21. Retrolateral view. Scale bars = 0.5 mm.



Figs 22 – 29. *Macrothele bannaensis* Xu & Yin, 2001, specimens from Xishuangbanna. 22 – 24. Left palp. 25 – 26. Labium and endites, ventral view. 27. Tibia II. 28 – 29. Habitus. 22 – 25, 27 – 28. Male. 26, 29. Female. 22, 27. Prolateral views. 23, 28 – 29. Dorsal views. 24. Retrolateral view. Scale bars: 22 – 27 = 0.5 mm; 28 – 29 = 2.0 mm.



Fig. 30. *Macrothele bannaensis* Xu & Yin, 2001, female from Xishuangbanna. Vulva, dorsal view. Scale bar = 0.5 mm.

seasonal rainforest, *Paramichelia baillonii* plantation of Xishuangbanna Botanical Garden (21°55'N, 101°11'E; alt. 880 m), Dec. 2006 – July 2007, leg. ZHENG Guo.

Diagnosis. The species is similar to *M. monocirculata* Xu & Yin, 2000 in embolus gradually tapering to a slender point (Figs 17 – 18, 21 – 24), but can be distinguished by: 1) palp with 12 spines (8 prolateral and 4 dorsal) on tibia and three dorsal spines on patella (Figs 17 – 18, 21 – 24); but dorsal spines absent in *M. monocirculata*; 2) lyra absent on palpal trochanter and coxa I, but present in both sexes of *M. monocirculata*.

Description. Male (here described for the first time): TL 10.55 (including chelicerae), CL 4.30, CW 3.60, AL 5.25, AW 3.25, AME diameter 0.21, ALE diameter 0.18, AME-AME 0.14, AME-ALE 0.08, PME diameter 0.33, PLE diameter 0.21, PME-PME 0.55, PME-PLE 0.05, leg I: 12.60 (3.60 + 1.70 + 2.65 + 2.50 + 2.15), leg II: 11.95 (3.25 + 1.65 + 2.45 + 2.85 + 1.75), leg III: 12.65 (3.30 + 1.60 + 2.50 + 3.40 + 1.85), leg IV: 14.45 (3.65 + 1.70 + 3.10 + 4.10 + 1.90). Carapace red-brown. Cephalic region slightly elevated. Eyes in a compact group. Chelicerae red-brown. Labium, endites and sternum yellow-brown. Labium wider than long, carrying 20 cuspules (Fig. 25). Sternum with 3 pairs of sigilla, anterior two pairs smaller than posterior pair. Palp and legs yellow-brown, spinose and hairy. Bulb ovoid; tip of embolus almost reaching proximal end of tibia (Figs 17 – 18, 21

– 24). Lyra absent from palpal trochanter and coxa I. Legs without megaspines or ventral spurs. Leg I with 21 spines (patella 1, tibia 8 ventral and 1 prolateral, metatarsus 9, tarsus 2); leg II with 15 spines (patella 1, tibia 1 prolateral and 3 ventral, metatarsus 6, tarsus 4); leg III and IV with many spines. Abdomen gray-brown, hairy and with 4 pairs of light patches (Fig. 28). Two pairs of spinnerets.

Female. TL 14.42 (including chelicerae), CL 5.45, CW 4.42, AL 7.14, AW 6.09, AME diameter 0.28, ALE diameter 0.32, AME-AME 0.10, AME-ALE 0.06, PME diameter 0.20, PLE diameter 0.22, PME-PME 0.52, PME-PLE 0.05. Leg I: 11.61 (3.53 + 1.92 + 2.31 + 2.12 + 1.73), leg II: 10.83 (3.21 + 1.86 + 2.24 + 2.05 + 1.47), leg III: 14.24 (3.85 + 1.92 + 2.95 + 3.53 + 1.99), leg IV: 11.54 (3.27 + 1.67 + 2.18 + 2.63 + 1.79). Labium wider than long, carrying 20 – 23 cuspules (Fig. 26). Abdomen gray-brown, hairy, with 4 pairs of patch. Two pairs of spinnerets.

Variation. Total length 9.34 – 14.08 (males, $n = 8$), 9.75 – 14.42 (females, $n = 8$).

Distribution. Yunnan, China.

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中国云南西双版纳热带雨林大疣蛛（蜘蛛目，异纺蛛科）

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摘要 记述了采自中国科学院西双版纳热带植物园 2 种大疣蛛，勐仑大疣蛛，新种 *Macrothele menglunensis* sp. nov. 和版纳大疣蛛 *M. bannaensis* Xu & Yin, 2001。版纳大疣蛛的雄性是首次报道。所有标本均保存在中国科学院动物研究所。

勐仑大疣蛛，新种 *Macrothele menglunensis* sp. nov. (图 1 ~ 16)

正模雄，中国科学院西双版纳热带植物园橡胶林 (21°55'N, 101°16'E; 海拔 585 m)，云南省勐腊县勐仑镇，2006 年 12 月 16 日 ~ 24 日，郑国采集。副模：102 雄，12 雌，中国科学院西双版纳热带植物园，2007 年 1 月 1 日 ~ 2 月 31 日，郑国采集。

鉴别特征 新种与版纳大疣蛛 *M. bannaensis* 相似，1) 新

关键词 新种，分类，词源学，描述，鉴别特征。

中图分类号 Q959.226

种下唇有 2 ~ 4 个疣突 (图 9)，而版纳大疣蛛有超过 20 个疣突 (图 25)；2) 新种触肢胫节无刺 (图 1 ~ 2, 5 ~ 8)，但版纳大疣蛛触肢胫节有刺 (图 17 ~ 18, 21 ~ 24)；3) 新种雄性第 2 步足胫节下端隆起上有 2 根大刺 (图 3, 11 ~ 13)，但版纳大疣蛛缺少隆起 (图 19, 27)；4) 新种纳精囊端部球形，膨大 (图 4, 16)，但版纳大疣蛛为梨形 (图 20, 30)。

词源：新种种名源于地名，形容词。

版纳大疣蛛 *Macrothele bannaensis* Xu & Yin, 2001

标本检视：659 雄，102 雌，中国科学院西双版纳热带植物园 (21°55'N, 101°11'E; 海拔 880 m)，云南省勐腊县勐仑镇，2006 年 12 月 ~ 2007 年 7 月，郑国采集。

雄性为首次报道。